Notice in next No. of Arnold's
Sentinel for Miscellaneous Notes
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Arnold's [illegible] 1 July: have not
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Sent to Whittaker for Mr [illegible]
1st of Feb.

Transactions of the Berwickshire Naturalists' Club. | Bibliographical

(Vol. V. p. 129)

In a former Number, we noticed with cordial approbation the pleasing & useful proceedings of this society; to which we not merely wish prosperity, but that it may serve as a model for similar associations in every part of the country. — We have since been favoured with a copy of the proceedings of the Club for 1841, containing the Address of Sir Francis Douglas at the Anniversary held at Kelso Sept. 15. in which an account is given of the preceding Anniversary ~~which~~ at Holy Island, then selected as the ~~scene of the four~~ scene of one of the periodical excursions of the club members, ~~upon~~ Here we are informed " The walks of the Club pp. 243, 244, 245, — "for the year!"

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The Anniversary Address to the Berwickshire Naturalists' Club, delivered at Kelso, 15th September 1841. By FRANCIS DOUGLAS, M.D., President.

GENTLEMEN,

Previous to resigning the honourable situation to which I was elevated at the last Anniversary Meeting of the Club, I must discharge the usual duties of your President, by giving an account of the transactions of the Club, during the year which has now expired.

The 10th anniversary meeting of the Club took place at Holy Island on the 30th of September, when the following members attended; Dr Johnston, P. J. Selby, Esq., Dr Clarke, Captain Mitford, Mr Melrose, and F. J. W. Collingwood, Esq. The Club were honoured with the company of the Rev. J. Dixon Clarke, Messrs Hubback and Heath, Barristers, and Mr Alexander Douglas, from Kelso.

After breakfast, a letter addressed to the Secretary of the Club from Chevalier Michelotti of Turin was read. It conveyed an offer of the Fossils of Italy, belonging to the Tertiary period. It was a matter of regret that this handsome offer could not be accepted, in consequence of one of the fundamental rules of the Club forbidding the acquisition of any property; "but it was a flattering unction to their consequence and importance to know, that their name and fame had spread beyond the land of brown heather, and was cherished even in the land of the vine and the myrtle." The walk of the Club was directed towards the Coves, where an hour or two was busily devoted in searching out and noting the various marine animals which lurk beneath the flat stones in "*Coves-haven.*" The Coves are excavated in a very picturesque sandstone cliff, of about 200 yards in length, and 35 feet in height: three of them are of considerable size and interest; their walls are covered with a dense coat of the *Polysiphonia stricta*, which gives them the appearance of being papered with a rich scarlet cloth. In former times, they were the resort of numerous flocks of seals, which took, in those cool recesses, their repose without fear of surprise; but they have now forsaken their ancient haunts, expelled by the too frequent visits of lovers of the picturesque or of poaching, and by the revels of pleasure parties and Pickwickians. A few rarities were found in the haven, of which the following may be specified.—Of Algæ, the only one worth notice is *Zonaria deusta*, which spreads like a lichen over the rioks in great profusion. The *Millepora lichenoides*, the *Melobesiæ*, and *Corallina officinalis*, occurred in every pool; and it was easy to demonstrate by the different

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staged specimens there, that these productions were merely different states of one species. The *Halisarca* of Dujardin, perhaps the lowest of animal organizations, was noticed in much abundance and perfection; and we could easily imagine, that, by the addition of siliceous spicula, immersed and crossed in its texture, it might become the *Halichondria panicea* of Fleming, which grew alongside of it in several varieties.—Of the calcareous sponges, there were met with *Grantia coriacea, botryoides, foliacea,* and a singular variety of *G. ciliata.*—Of Zoophytes, *Coryne squammata, Laomedea gelatinosa, Sertularia pumila, Lepralia coccinea, Actinea mesembryanthemum,* abounded, and in especial perfection and beauty.—Of the Echinodermata, no other species than *Echinus esculentus, Ophiura fragilis* and *neglecta,* occurred. The *Echinus* was generally hidden by broken pieces of sea-weed, with which it covered its shell.—Of the *Mollusca tunicata,* there were many species remarkable for their beauty, but we can only specify the *Ascidia rustica, Phallusia intestinalis,* and *Aplidium ficus,* for of the others the names could not with certainty be determined. The calcareous stones were often found perforated with *Pholas crispata,* and one stone was found by Captain Mitford, with many of the shells still living hidden in their excavations. In one of these holes, a good specimen of *Venus perforans* was found; and the *Saxicava rugosa* was not uncommon. A great number of specimens of *Lamellaria tentaculata* of *Montagu* were taken, shewing that the species is liable to considerable variation in colour, and in the degree of roughness of the mantle.—Several very minute individuals of the *Doris tuberculata* were taken up unnoticed, until after our return home, and it is remarkable that in these, some of which were an eighth of an inch in length, there was no appearance of branchiæ. Another member of the family Doridæ occurred, which is without exception the most beautiful naked gasteropode we have seen; its name remains for future investigation.

Passing from the Haven, the party next crossed over a formation of limestone, consisting of three beds, from three to four feet each in thickness, which, at the point to the eastward of the north sands, assume a singularly undulated appearance. Mr Skafe has given a very brief description of these, and a figure, illustrative of their undulations, in Raine's History of North Durham, p. 172. Thence we walked to the Snook, to the spot where Mr Donaldson Selby is boring for coal. Here the party separated, one division walking towards the village in as direct a line as possible, that they might have leisure to examine the Priory, Church, and Castle; an other set, bent on the murder of rabbits and partridges, wandered over the links and fields in many a devious track; while a third set wandered leisurely round by the loch in search of rarities in any class or kingdom of animality, but they were as little successful as their murderous or sporting colleagues. At dinner the party were reunited, and afterwards, as is our wont, the Secretary read the address of the President, who was prevented from attending by absence from home. On the nomination of Mr Selby, Dr F. Douglas was elected President for the ensuing year. A notice of the occurrence of the *Halichærus gryphus* on the coast, by Dr Douglas, was next read, on which Mr Selby was requested to report at the next meeting. Dr Johnston was appointed Secretary for the year.

At the Winter Meeting at Berwick, held on December 16, the following members attended: Dr Douglas, president; Dr Johnston, secretary; Rev. Thos. Riddell, Mr Melrose, Dr Clarke, Mr Selby, Mr Good, Rev. J. Turnbull, and Mr Langhorne. Mr Tancred, Mr Wm. Tancred, and Mr Wilkie of Fouldean, attended as visitors. The members of the Club having partaken of Dr Johnston's hospitality at breakfast, the minutes of the last meeting were read and approved of. Mr Selby then reported that the seal described by Dr Douglas, in a communication read to the Club in September last, was, as Dr Douglas supposed, the *Halichærus gryphus*, and that he had since procured three specimens of the heads of the same species from the Farne Island, where Mr Selby now believes the *Phoca barbata*, for which the Halichærus had been mistaken, is not to be found.

On the motion of Mr Selby, the Rev. J. D. Clarke, and on the motion of Mr Riddell, Mr David M'Beath, were admitted members of the Club. It was next agreed that the Club should meet in 1841, at the following places in succession, Ayton, Wooler, Bank House, and Kelso.

Mr Selby presented the Club with a list of the dipterous insects in the collection of Mr Hardy, made in the neighbourhood of the Peasebridge, and with a notice of *Larus minutus*, killed at Holy Island. Mr Selby subsequently read an elaborate report on the ornithology of Berwickshire, which was ordered to be printed. Dr Johnston gave in a few ornithological notices of the occurrence of some rare birds in the neighbourhood of Berwick.

The Club then took their walk along the sea-banks as far as the Needle-Eye; but nothing to attract their special attention occurred, beyond what arose out of the beauty and picturesqueness of the sea, and many points in the rocky shore.

After dinner, the party again assembled at Dr Johnston's, who exhibited his collection of British Sponges, and gave a short explanation of the views of Grant, relating to their physiology and functions, and of whose correctness and accuracy in observation he has fully satisfied himself.

The Spring Meeting of the Club was held at Ayton on the 5th of May, and was attended by the following members: The President, the Secretary, P. J. Selby, Esq., Rev. A. Baird, Dr Clarke, Rev. G. Cunningham, and the Rev. J. Turnbull. The Rev. Mr Tough of Ayton honoured the Club with his company at dinner.

After breakfast, the party took the usual walk, strolling first through the grounds in front of Ayton House, and following the course of the river Eye, until they reached Mill-Bank paper-works, which they were permitted to examine. From this they traced up a certain length of the ravine through which the Aleburn winds its tortuous way. During this walk, nothing new, either to the Fauna or Flora of the district, occurred, and nothing very rare. A few fruit-bearing mosses were picked up, a few insects captured, and one or two shells, uncommon in the district, as *Bulimus obscurus* and *Helix pygmœa*, taken. The walk was, however, very agreeable; for, as the day was fine, the glow of spring-flowers, the rich verdure of the trees, and of the springing grass, the songs of the birds, and the murmuring of the waters of the stream, as it trotted over its gravelly bed, and its deep stillness as it lingered at the foot of precipitous whin-clad rocks, that rose abrupt from the water, came with a healing power on every heart, filling it with a pure feeling which welled forth in peace, and gaiety, and good will to all men. Chaucer has aptly painted the scene we walked in, but has apparently been as much at a loss as ourselves to describe the feelings it calls forth, just because of their fulness and blended natures.

"Who sawe evir so feyr or so glad a day,
And how sote this seson is entring into May?
The thrustelis and the thrushis in this glad mornyng,
The ruddok and the goldfynch,
His amerous notis, lo! how he twynith small!
Lo! how the trees grenyth that nakid wer, and nothing
Bare this month afore but their sommer clothing!
Lo! how Nature makith for them everichone!
And as many as ther be he forgettith none!
Lo! how the seson of the yere and Averell showris
Doith the bushis burgyn out blossoms and flowris!
Lo! the prymerosis how fresh they ben to sene!
And many othir flowris among the grassis grene.
Lo! how they spryng and sprede, and of divers hue!
Beholdith, and seith both rede, white and blue!
That lusty bin and comfortabill for mann'ys sight!
For I sey for myself it makith my hert to light!"

This walk gave us also zest and appetite to enjoy the very good dinner that awaited our return to the village; and, after a talk more pleasant than wise, we separated in the pleasing hope of meeting again together at Wooler on the 16th of June, to talk of the beauties of Nature, and draw, from new and equally agreeable strolls, the best of all arguments of the use of Natural History. At Wooler, accordingly, in June, the Club met, and the number of members who were present proved that the place of rendezvous was well chosen. Dr Douglas, president, Dr Johnston, secretary, Rev. J. Baird, P. J. Selby, Esq., Dr Clarke, Rev. T. Knight, Fred. Collingwood, Esq., Mr Melrose, Mr M'Beath, and the Rev. J. D. Clarke, attended, and were joined by the Rev. H. Grey, and H. Knight, Esq., as visitors.

The morning-walk was towards Wooler Common, which was traversed in different directions; when the members crossed the moors so as to come down upon Cold-gate Burn. The course of this sweet trouting stream was followed until its entrance into the Wooler water, which the members walked upwards towards Langleyford, loitering away the hours in the fine valley between that place and Middleton. The Club then returned by the usual road to Wooler. During the walk, nothing new for observation was met with. A gentle rain fell during the whole time; but any inconvenience to which it put the members was uncomplained of, for they were too sensible of its need to the crops of corn, and too grateful for its certain benefits, to heed a wetting. Many rather rare plants, which were previously known to be denizens of the district, were again noticed, such as *Listera cordata*, *Genista anglica*, *Myosotis cæspitosa*, &c. and specimens of several mosses, in a remarkably fine condition, were picked. One of these, *Bartramia fontana*, attracted general admiration, from the beautiful softness of its green foliage, and the elegance of the round apple-like capsule which surmounted the stem. The insects observed, owing to the unfavourable nature of the day, were remarkably few. The Ring-ouzel was observed in its breeding ground, on the sides of the hills rising from the Cold-gate Burn.

After dinner, Mr Collingwood exhibited a piece of animal fat or adipocere found in a peat-bog near Old Yeavering, about three feet under the surface. The mass, when found, was 9 inches long, 6 broad, and 6 deep, with an irregular surface.

On the 28th of July, the Club met at Bank House, when, notwithstanding the fineness of the weather, there was a very scanty attendance; the only members present being Dr Douglas, president; Dr Johnston, secretary; and Mr Melrose. After a comfortable breakfast, the members sallied forth to take their accustomed walk. The Pease Bridge and Glen having been visited on former occasions by the Club, the route taken on this occasion was in the direction of Abbey St Bathans, over moors the greater part of the way. The waters of the Eye were traced for some distance; but their banks proving very uninteresting, the members proceeded to the extensive moor lying between the Eye and the Whitadder. The *Erica cinerea* raised its beautiful bell-shaped blossoms above the surrounding turf, the richness of its colours putting to the blush many of our highly prized exotics. The route homewards from Abbey St Bathans was somewhat varied; but nothing worthy of notice occurred. The members, however, enjoyed the delight of respiring the fresh air of the hills, and carried on an unceasing conversation, on a variety of subjects, until their return to the inn.

After dinner, Dr Johnston communicated to the Club that he had received the interesting notice of the discovery of *Linnæa borealis* in Berwickshire, specimens of which were laid on the table. It was discovered seven years ago by Mr Dunn, gardener at Mellerstain; but for the notice, the Club is indebted to Mr Hislop, teacher in the Normal Schools of Glasgow. "The Linnæa occupies a space of about 150 yards in a fir-wood near Lightfield Farm, Mellerstain." It was, when Mr Hislop visited the spot, in the middle of July, just going out of flower; but several specimens in that state were gathered. The time of flowering is stated in our British Floras to be in May and June, but this period would appear to be too early for our district; "and as a pilgrimage to the habitat of a plant which commemorates the immortal name of Linnæus," says our worthy Secretary, "seems to be almost a sacred duty on the part of our Club, I would respectfully suggest the propriety of fixing our next year's June meeting at the village nighest to it."

Such, gentlemen, is an account of the proceedings of the Club during the eleventh year of its existence, derived chiefly from the minutes kept by the Secretary. From the preceding report, it would appear that the past year has not been very prolific in discovery; yet enough has been done to shew that even on ground previously and carefully searched, objects have escaped observation which another and more scrutinizing visit might bring to light; and as there are yet many localities within the limits of the Club unvisited, it may not unreasonably be expected that new and important discoveries may be made in the Flora and Fauna of Berwickshire. One very interesting addition to the former has been very recently made by Mr Marshall, gardener at Cheek-Law, near Dunse, who has drawn from its lurking place in Dulaw Dean the *Herniaria glabra*, a small procumbent plant, not only new to Berwickshire, but to the Scottish Flora, and equally remarkable for its occurrence in one solitary spot in England. / The fact that two very interesting additions to the phenogamic Flora of the district have been made during the last year, is an additional incentive, were any such wanting, for continued exertion, which will doubtless not go unrewarded. /

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That, as a branch of education, Natural History should not be more taught in our Schools and Academies, is a subject of great regret. Teachers would find it highly useful in the moral and intellectual training of children to call their observant faculties into action, and to point out to their opening minds the beautiful and wonderful adaptation of means to particular ends, which are constantly to be observed in the works of creation. It cannot surely be undeserving the attention of man to investigate and enquire into the nature, and uses of objects, which the Almighty has in his infinite wisdom thought fit to call into existence. Habits of observation and discrimination are those which teachers so constantly labour to instil into their pupils, and from no study would they derive more assistance in forming their minds than from Natural History, a science wholly dependent on accuracy of observation and correctness of discrimination. To many men it has through life been matter of deep regret, that less attention had been paid to their early education in this respect. Men are often placed in circumstances in which such knowledge would not only prove agreeable but highly advantageous to them ; and had Natural History no other charm, it tends to raise the thoughts and exalt the mind of man from grovelling pursuits to a contemplation of the Author, not only of his own existence, but of the whole material universe.

NOTE —The naked nudibranchial mollusk alluded to in p. 244, is described in Dr Johnston's MSS. under the name of *Polycera Landisfarniæ*, but it is probably a variety of the *Polycera cristata* of Alder in the Annals of Natural History, vol. vi. p. 340, pl. ix. fig. 10, 11 ; the description of which was not published at the date of the Club's meeting.

Report on the Ornithology of Berwickshire, and district within the limits of the Berwickshire Naturalists' Club. By P. J. Selby, Esq. of Twizell-House.

A district so varied as Berwickshire, and those portions of North Durham and Northumberland included within the limits of our Club, where a rich productive country, celebrated for the excellence of its agriculture, is intersected by numerous denes and gills, each containing, or affording, a channel to a clear and limpid stream of less or greater magnitude, and having their steep sides sometimes fringed with wood of ancient or more recent date, at others, clothed with the rich and golden blossoms of the whin and broom, with tangled copse of briar, blackthorn, and sweetly-scented May ; where extensive woods surround and beautify the numerous seats dispersed throughout its whole extent, and whose holms and haughs are intersected by *fair* Tweed, the Till, and the Eye ; whose upland districts are of that wild character which suit the habits of that truly British species, the Red Grouse, and other alpine birds ; whose seaward line, from Berwick to its northernmost extent, is bounded by bold precipitous cliffs, which reach their highest altitude at the beetling and far-famed promontory of St Abb's Head, affording a secure and appropriate breeding retreat to many of our aquatic summer visitants, while the low and slaky shore that extends from Berwick Bay to Fenham Flats, becomes the resort of our aquatic winter visitants ;—may naturally be expected to present a numerous ornithological list, and to contain a large proportion of the British birds ; and this we think must be allowed, the annexed list exhibiting a return of nearly two-thirds of the birds recorded as British.

Upon analyzing the contents of the list, and commencing with the Raptorial Order, we find twelve species belonging to the Falconidæ, six of which are residents, the remainder coming under the denomination of occasional visitants : of the latter, several instances of the cinereous or great sea-eagle (*Haliaëtus albicilla*) have occurred within our precincts. All the examples of this kind that I have seen and examined have been in immature plumage ; a circumstance, however, not at all remarkable, as the adults, when once paired, rarely leave the immediate vicinity of the eyry they have selected, and the young, after quitting the nest, are always driven from the district in which they have been bred by the parent birds. The frequent appearance of this species in lowland districts, as compared with that of the golden eagle (*Aquila Chrysaëtos*), may be attributed to its maritime and coasting habits, the latter affecting the mountainous inland districts, from which it rarely strays. Of the osprey (*Pandion haliaëtus*), a species still more aquatic in its habits, only one instance, within our limits, has yet occurred: its rarity, however, is sufficiently accounted for from the paucity of the bird throughout Britain. The honey buzzard (*Pernis apivorus*) and ash-coloured harrier (*Circus cineraceus*) are equally rare; a single specimen only of the latter has yet occurred. The peregrine falcon (*Falco peregrinus*) is more frequently seen, and one eyry, at least, is known to most of our members, in the lofty precipice a little to the north of St Abb's Head. Of the Strigidæ or owls, there appear to be four species, three of which are resident, and one a periodical winter visitant: of the former, the *Otus vulgaris*, long-eared owl, and *Strix flammea*, barn owl, are both well known and abundant; the third, the *Ulula stridula*, tawny owl, though formerly a common species, is now rarely met with. The short-eared owl, *Otus brachyotos*, arrives in November, and is frequently met with upon the moors or open fields in rushy ground, where it roosts concealed during the day, except in dark foggy weather, when we have frequently seen it hawking at noon.

Of the Fissirostral tribe, belonging to the order Insessores, the list contains five periodical summer visitants, and one occasional visitant; of the former, four belong to the swallow family, and one to the goatsuckers. The occasional visitant is the kingfisher, more remarkable for the richness and beauty of its plumage than the gracefulness of its form. The window swallow, or, as it is frequently called, the white-rumped martlet, breeds in great numbers in the rocky precipices north of Eyemouth, and at St Abb's Head; these appear to be the natural breeding situations of the species, the eaves of houses and corners of windows being only resorted to where the others are deficient. At Inchnadamff, in Sutherland, we recollect observing the species breeding in great numbers about the precipitous face of the limestone or marble mountain of that district.

Of the Dentirostral tribe of the same order, we enumerate fifteen permanent residents, seventeen periodical summer visitants, two periodical winter visitants, and three occasional visitants. Among the residents, the missel-thrush, which in our younger days was considered a very rare bird, has now become common, and during spring and summer may be heard around every residence uttering its broken lay, which, though loud and sonorous, is greatly inferior in compass and sweetness to that of its congener, the gentle mavis.

Among the periodical summer visitants, the Sylvidæ, or warbler family, not less interesting for their vocal powers than for their active and lively habits, occupy a prominent station. Among the rarer species we reckon the greater pettychaps (*Curruca hortensis*), whose notes are rich and liquid, many of them emulating those of the nightingale ; the grasshopper warbler (*Salicaria locustella*), and the little pettychaps (*Sylvia hippolais*). Other species also, we have remarked of late years, do not abound to the extent they formerly used to do : such is the case with the sedge-warbler (*Salicaria phragmitis*) and white-throat (*Curruca cinerea*), and the whinchat (*Saxicola rubetra*). This defalcation we are inclined to attribute chiefly to the effect of an improved system of agriculture, which, by draining and reclaiming the marshy spots, and little tangled thickets of sallow, and other rough and rampant herbage that used to be so common in many of our fields, and the attention that is now paid to the cleansing of hedges, which are annually divested of their weeds, has destroyed the favourite and appropriate breeding-places of these birds, and may probably also, in so doing, have lessened the supply of some peculiar insect food, necessary to their own economy, or that of their young.

Among the occasional visitants is the *Lanius excubitor* (great butcher bird), which is only seen during the autumnal and winter months ; and that beautiful member of the Ampelidæ, the Bohemian waxwing (*Bombycilla garrula*) : most of our members will recollect the graceful actions and appearance of the beautiful specimen so long alive in the possession of Dr Johnston. The appearance of this species is very uncertain, and sometimes many years elapse without the occurrence of a single individual. Of the Fringillidæ, we enumerate nine permanent residents, three periodical winter visitants, and three occasional visitants. Among the periodical winter visitants, the snow-flake (*Plectrophanes nivalis*) sometimes appears in great numbers, particularly in the upland districts, where they haunt the open grassy tracts as well as the oat-stubbles ; in storms of snow they descend towards the coast, where small flocks of adult males are often seen together, the females and young birds keeping by themselves, and generally in larger bodies. The mountain finch (*Fringilla montifringilla*) is another winter visitant from the Arctic Regions, and in some seasons is very numerous. It often associates with the chaffinches, to which it is nearly allied ; but may be distinguished from it by its note, call, and superior size. Of the occasional visitants, the siskin (*Carduelis spinus*), an elegant little bird, is sometimes very abundant during the winter and early spring months ; it is generally seen where the birch and the alder abound, as the seeds of these trees are its favourite food ; on this account it is most frequently seen on the banks of our rivers and burns, where the latter tree usually grows. The crossbill is another bird whose visits used formerly to be at very uncertain intervals, but which, of late years, has almost assumed the habits of a permanent resident, and has been found breeding in the island : this change of habit we attribute to the extensive plantations spread over the kingdom, most of which contain a large proportion of the fir tribe, the seed of which is its chief subsistence.

The only member of the Sturnidæ* is the common starling, which we note as a permanent resident, for, though it changes its feeding-ground according to the seasons, it never appears to be far distant, as we observe the few pairs that nidificate at Twizell frequently visit their haunt during winter, and when not engaged in incubation. The members of the Corvidæ, or crow family, are eight in number, all of which are permanent residents, except the royston or grey-backed crow (*Corvus cornix*), which is here a periodical winter visitant, its summer retreat being the northern parts of Scotland, Norway, &c. In its form and habits it is intermediate between the carrion crow (*Cor. corone*) and the rook (*Cor. frugilegus*), though, we believe by Dr Fleming, it is still considered as a mere variety of the former, an opinion in which, it is scarcely necessary to say, we do not acquiesce: as a species, it seems to us as well marked as any in the genus. The jay, one of the handsomest members of the family, is thinly disseminated in the district, a few are generally resident in the larger woods, such as those of Detchant, Fenwick, Kyloe, &c. The red-legged chough (*Fregilus graculus*), another of the family whose distribution is local, and limited to districts where high and precipitous rocks abound, finds a congenial retreat in the precipices of St Abb's Head and adjoining coast : here it is not uncommon, but being a bird of a wary habit, it is very difficult to approach within gunshot, and specimens are not easily obtained. Of the Scansorial tribe, the *Picus major* (great spotted woodpecker) is the only species belonging to the Picidæ that we venture to insert in the list, having at different times met with a few individuals, during the period of their migrations, within the limits of the Club, viz. one at Haggerstone, and two or three at Twizell. The wry-neck (*Yunx torquilla*) and hoopoe (*Upupa Epops*), belonging to the same tribe, are only admitted as very rare visitants, one of the former having been killed at Twizell, and two or three specimens of the latter within our limits. In the numbers of the cuckoo or gowk (*Cuculus canorus*) which visit us annually, we think we perceive a great decrease within the last twenty years ; this we also attribute to the advance of agriculture, and to the inclosure of those wastes and open lands which, in a natural state, produced a more abundant supply of caterpillars, the favourite food of the cuckoo, than they now do under the system of husbandry to which they are subjected.

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* Rose-pastor, killed at Tweedmouth and Ladythorn.

Of the Columbidæ belonging to the Rasorial order, we possess two permanent residents, viz. the ring-dove or cushat (*Columba palumbus*), a most abundant species; but from the injury it commits on the young clovers and the turnip-fields, is held as an enemy, and proscribed by the farmer; the other is the rock-pigeon, the original stock of our dovecot pigeons, which inhabits the cavernous precipices along the coast. As an occasional visitant we are also able to add the turtle-dove to the list, a small flock having visited the neighbourhood of Berwick this last autumn.

Of the Phasianidæ, the only member is a permanent resident; and of the Tetraonidæ three are permanent residents, and one, the quail, which we have met with at Cornhill and other parts within our limits, an occasional visitant.

Of the Otidæ, or bustard family, we have ventured to insert the *Otis tetrax* (little bustard), a single specimen having been killed within half a mile of Twizell.

Of the Ardeadæ, or heron group, belonging to the order Grallatores, we reckon three species; one a permanent resident, the other two, viz. the bittern (*Botaurus stellaris*) and the night heron (*Nycticorax europæus*), rare visitants. A fine specimen of the latter was killed some years ago at the Hirsel, and presented to the Edinburgh museum by the Earl of Home.

Of the Scolopaceous family, there are two permanent residents, one periodical summer visitant, seven periodical winter visitants, and seven occasional visitants. Among the latter we may mention as rare, the green sandpiper (*Totanus ochropus*), the greenshank (*Totanus glottis*), the solitary snipe (*Scolopax major*), the ruff (*Machetis pugnax*) in its winter plumage, and generally young birds of the year, and the grey phalarope (*Phalaropus lobatus*); the only summer visitant of the family is the *Totanus hypoleucos* (common sandpiper), a neat clean looking bird, well known to the angler, and whose wing-feathers often assist him in taking his finny prey.

Of the Rallidæ there are five members, three of which are periodical summer visitants, one a permanent resident, and one a periodical winter visitant. To the first belongs the Corncrake, whose well known grating call is first heard towards the end of May, in the meadow-lands, particularly those adjoining the margins of the Tweed, the Whitadder, and other streams. Of the Plovers, or family Charadriadæ, there are three permanent residents, one periodical summer visitant, the well known green plover or pewit, *Vanellus cristatus ;* three periodical winter visitants, all of which are shore birds ; and one occasional visitant, the dottrel, *Charadrius morinellus*, which rests for a few days upon the grounds around Scremmerston and Unthank, in April or beginning of May, when passing to its breeding stations in higher latitudes.

Entering upon the order Natatores, we enumerate as members of the Anatidæ three permanent residents, one periodical summer visitant, the beautiful piebald sheldrake, which breeds annually in the rabbit-holes upon the links at Holy Island and Ross ; seven periodical winter visitants, and seven occasional visitants. Among the latter are the two species of wild swans (*Cygnus ferus*, and *C. Bewickii*), the bernicle or clake-goose (*Bernicla leucopsis*), which I have received from Holy Island ; also that very rare bird the *Anser ruficollis*, a specimen having been shot near Berwick several years ago, which found its way into Bullock's museum, and from thence, we believe, into that of St Petersburgh. The Shoveller (*Spathulea clypeata*) has also been killed upon the Tweed.

Of the true divers or Colymbidæ, the list contains eight members ; one of which, the little grebe or dabchick (*Podiceps minor*), though not numerous, is a permanent resident. Six are periodical winter visitants, four of which belong to the genus Podiceps, the other two are the great northern and red-throated divers (*Colymbus glacialis* and *C. septentrionalis*), both of which frequent the mouth of the Tweed and Berwick Bay during the winter and early spring months ; the eighth member is the *Colymbus arcticus*, black-throated diver, a rare visitant. A fine specimen, caught in a salmon-net in the Tweed, is now in my possession.

Of the Auk family, Alcadeæ, there are three periodical summer visitants, all of which breed in great numbers in the precipitous cliffs of St Abb's Head ; and two occasional winter visitants, viz. the *Uria grylle*, black guillemot, and the *Mergulus alce*, rotch, a species that breeds in very high latitudes, and is frequently mentioned in the writings of arctic navigators.

The Pelicanidæ are three in number, two of which, the common cormorant (*Phalacrocorax carbo*), and the crested shag (*P. cristatus*), are permanent residents ; the *Sula bassana*, solan goose, we may consider as a periodical summer visitant, as it is to be seen almost daily skimming along the surface of the water, or precipitating itself upon its prey within our limits, on its flight to and from the isle of Bass, its great breeding station on the eastern coast.

Of the Laridæ, or Gull family, there appears to be only one we can properly designate a permanent resident, viz. the *Larus ridibundus*, black-headed gull. Within our district this species has several breeding stations, the principal of which are the pieces of water at Pallinsburn, Paston, and Dunse Castle. Six species appear as periodical summer visitants, four of which belong to the Terns, a genus distinguished from the gulls by their swallow-like form and a more rapid and powerful flight; the other two are the herring-gull *(Larus argentatus)*, and lesser black-backed gull (*L. fuscus*), the first breeding in great numbers in the sea-cliffs. There is also one periodical winter visitant, the common gull (*L. canus*), and five occasional visitants, among which are the two large white-winged gulls (*L. glaucus* and *L. islandicus*), and the *Lestris Richardsonii*, arctic skua, better known, perhaps, by the name of the dung teazer.

RAPTORES.

Falconidæ.

Haliaëtus albicilla.	White tailed Sea Eagle. Specimens killed on the coast, and at Holy Island.	Occas. visit.
Pandion Haliaëtus.	Osprey.	Occas. visit.
Accipiter fringillarius.	Sparrow Hawk.	Perman. resid.
Falco peregrinus.	Peregrine Falcon. An eyry at St Abb's Head.	Perman. resid.
tinnunculus.	Kestril.	Perman. resid.
Æsalon.	Merlin. Not uncommon.	Perman. resid.
Buteo vulgaris.	Common Buzzard. A specimen from Millerstain.	Occas. visit.
lagopus.	Rough legged Buzzard. Several killed last winter within the district.	Occas. visit.
Pernis apivorus.	Honey Buzzard. A specimen in my possession killed at Alnwick.	Occas. visit.
cyaneus.	Hen Harrier.	Perman. resid.
Circus æruginosus.	Moor Harrier Now rare.	Perman. resid.
cineraceus.	Ash-coloured Harrier. Very rare. A specimen in my possession, killed near Detchant.	Occas. visit.

Strigidæ.

Otus vulgaris.	Long Eared Owl.	Perman. resid.
Brachyotos.	Short Eared Owl. Common during winter months, upon moors, in bushy fields, &c.	Period. W. vis.
Strix flammea.	White or Barn Owl.	Perman. resid.
Ulula stridula.	Tawny Owl. Now rare.	Perman. resid.

INSESSORES.

Fissirostres.

Hirundiniæ.

Hirundo rustica.	Chimney Swallow.	Period. S. visit.
urbica.	Window Swallow or Martlet.	Period. S. visit.
riparia.	Bank Swallow or Sand Martin.	Period. S. visit.
Cypselus murarius.	Swift.	Period. S. visit.

Caprimulgidæ.

Caprimulgus europeus.	Common Goatsucker.	Period. S. visit.

Halcyonidæ.

Alcedo Ispida.	Kingfisher. Rare.	Occas. visit.

Dentirostres.

Muscicapidæ.

Muscicapa grisola.	Spotted Flycatcher.	Period. S. visit.
luctuosa.	Pied Flycatcher. Rare.	Occas. visit.

Laniadæ.

Lanius excubitor.	Great Butcher Bird or Shrike.	Occas. W. visit.

Merulidæ.

Merula viscivora.	Missel Thrush.	Perman. resid.
pilaris.	Fieldfare.	Period. W. vis.
Iliaca.	Redwing.	Period. W. vis.
musica.	Thrush.	Perman. resid.
vulgaris.	Blackbird.	Perman. resid.
torquata.	Ring Ouzel.	Period. S. visit.
Cinclus aquaticus.	Dipper, Water Crow.	Perman. resid.

Sylviadæ.

Saxicola Œnanthe.	Wheatear.	Period. S. visit.
rubecola.	Stonechat.	Perman. resid.
rubetra.	Whinchat.	Period. S. visit.
Erythaca rubecula.	Redbreast.	Perman. resid.
Phœnicura ruticilla.	Redstart. Not common.	Period. S. visit.
Salicaria locustella.	Grasshopper Warbler.	Period. S. visit.
Phragmitis.	Sedge Warbler.	Period. S. visit.
Curruca atricapilla.	Blackcap.	Period. S. visit.
hortensis.	Greater Pettychaps.	Period. S. visit.

Curruca cinerea.	Whitethroat.	Period. S. visit.
Sylvia hypollais.	Lesser Willow Wren. Not common.	Period. S. visit.
sibilatrix.	Wood Wren.	Period. S. visit.
trochilus.	Willow Wren. Plentiful.	Period. S. visit.
Regulus atricapillus.	Golden Crested Regulus.	Perman. resid.
Parus major.	Great Titmouse.	Perman. resid.
cœruleus.	Blue Titmouse.	Perman. resid.
palustris.	Marsh Titmouse.	Perman. resid.
ater.	Cole Titmouse.	Perman. resid.
caudatus.	Long-tailed Titmouse.	Perman. resid.
Accentor modularis.	Hedge Accentor.	Perman. resid.
Motacilla Yarellii.	Pied Wagtail.	Period. S. visit.
boarula.	Grey Wagtail.	Period. S. visit.
flava.	Yellow Wagtail.	Period. S. visit.
Anthus petrosus.	Rock Pipit.	Perman. resid.
pratensis.	Common Pipit.	Perman. resid.
arboreus.	Tree Pipit.	Period. S. visit.

Ampelidæ.

Bombycilla garrula.	Chatterer, or Bohemian Waxwing.	Occas. visit.

Fringillidæ.

Alauda arvensis.	Skylark.	Perman. resid.
arborea,	Woodlark. A specimen taken at Twizell.	Occas. visit.
Plectrophanes nivalis.	Snowflake.	Period. W. vis.
Emberiza miliaria.	Corn Bunting.	Period. resid.
citrinella.	Yellow Bunting.	Perman. resid.
schœniculus.	Reed Bunting.	Perman. resid.
Pyrgita domestica.	Common Sparrow.	Perman. resid.
Fringilla cœlebs.	Chaffinch.	Perman. resid.
montifringilla.	Mountain Finch.	Period. W. vis.
Carduelis spinus.	Siskin.	Occas. W. visit.
elegans.	Goldfinch.	Occas. visit.
Linaria cannabina.	Grey Linnet.	Perman. resid.
minor.	Lesser Redpoll Linnet.	Period. S. visit.
Coccothraustes chloris.		Perman. resid.
Loxia curvirostris.	Crossbill.	Occas. visit.
Pyrrhula vulgaris.	Bullfinch.	Perman. resid.

Sturnidæ.

Sturnus vulgaris.	Common Starling.	Perman. resid.
Pastor roseus.	Rose-coloured Pastor.	Occas. visit.

Corvidæ.

Corvus Corax.	Raven.	Perman. resid.

Corvus Corone. Carrion Crow.	Perman. resid.
cornix. Hooded Crow.	Period. W. visit.
frugilegus. Rook.	Perman. resid.
monedula. Jackdaw.	Perman. resid.
Pica melanoleuca. Magpie.	Perman. resid.
Garulus glandarius. Jay.	Perman. resid.
Fregilus graculus. Chough.	Perman. resid.

SCANSORES.

Picidæ.

Picus major. Great spotted Woodpecker.	Occas. visit.

Certhiadæ.

Yunx torquilla. Wryneck. Once near Twizell.	Occas. visit.
Certhia familiaris. Creeper.	Perman. resid.
Troglodytes Europæus. Common Wren.	Perman. resid.
Upupa Epops. Hoopoe.	Occas. visit.

Cucullidæ.

Cuculus canorus. Cuckoo.	Period. S. visit.

RASORES.

Columbidæ.

Columba palumbus. Ringdove.	Perman. resid.
livia. Rock Pigeon.	Perman. resid.
Turtur vulgaris. Turtle Dove.	Occas. visit.

Phasianidæ.

Phasianus Colchicus. Common Pheasant.	Perman. resid.

Tetraonidæ.

Tetrao Tetrix. Black Grouse.	Perman. resid.
Lagopus Scoticus. Red Grouse.	Perman. resid.
Perdix cinerea. Partridge.	Perman. resid.
coturnix. Quail.	Occas. visit.

Otidæ.

Otus Tetrax. Little Bustard. Once near Twizell.	Occas. visit.

GRALLATORES.

Ardeadæ.

Ardea cinerea. Common Heron.	Perman. resid.
Botaurus stellaris. Bittern. Now rare.	Occas. visit.

Nicticorax Europæus.	Night Heron. Rare. A fine specimen killed at the Hirsel.	Occas. visit.

Scolopacidæ.

Numenius arquatus.	Common Curlew.	Perman. resid.
Phæopus.	Whimbrel. Not common.	Occas. visit.
Totanus calidris.	Redshank Sandpiper.	Period. W. vis.
ochropus.	Green Sandpiper. Rare.	Occ. vis. in Aut.
hypoleucos.	Common Sandpiper.	Period. S. visit.
glottis.	Greenshank. Rare. A specimen killed at Holy Island, October 1840.	Occ. vis. in Aut.
Limosa rufa.	Common Godwit.	Period. W. vis.
melanura.	Black-tailed Godwit. Rare.	Occas. W. visit.
Scolopax major.	Great Snipe. Rare.	Occ. vis. in Aut.
Gallinago.	Common Snipe.	Perman. resid.
Gallinula.	Jack Snipe.	Period. W. vis.
rusticola.	Woodcock.	Period. W. vis.
Machetes pugnax.	Ruff. Fenham Slake.	Occ. vis. in Aut.
Tringa canutus.	Knot.	Period. W. vis.
maritima.	Purple or rock Tringa.	Period. W. vis.
variabilis.	Dunlin or Purre.	Period. W. vis.
Phalaropus lobatus.	Grey Phalerope. Very rare.	Occas. W. vis.

Rallidæ.

Rallus aquaticus.	Common Rail.	Period. W. vis.
Crex pratensis.	Meadow Crake.	Period. S. visit.
porzana.	Spotted Crake. Not common.	Period. S. visit.
Gallinula chloropus.	Common Gallinule.	Perman. resid.
Fulica atra.	Common Coot.	Period. S. visit.

Charadriadæ.

Hæmatopus ostralegus.	Oystercatcher or Seapie.	Perman. resid.
Strepsilus interpres.	Turnstone.	Period. W. vis.
Arenaria calidris.	Sanderling.	Period. W. vis.
Vanellus cristatus.	Lapwing.	Period. S visit.
Squaterola cinerea.	Grey Plover.	Period. W. vis.
Charadrius pluvialis.	Golden Plover.	Perman. resid.
morinellus.	Dottrel. At Unthank and Scremerston, in May.	Period. occ. vis.
hiaticula.	Ring Dottrel.	Period. visit.

NATATORES.

Anatidæ.

Anser palustris.	Grey Lag-goose.	W. visit.

Anser segetum or ferus. Bean-goose.	Period. W. vis.
albifrons. White-footed Wildgoose.	Occas. W. visit.
Bernicla. Bernicle or Clake Goose.	Occas. W. visit.
Brenta. Brent Bernicle.	Period. W. vis.
ruficollis. Red-breasted Goose. Very rare. A single specimen shot near Berwick, afterwards in Bulloch's Museum.	Occas. W. visit.
Cygnus ferus. Whistling Swan or Elk.	Occas. W. visit.
Bewickii. Bewick's Swan.	Occas. W. visit.
Tadorna vulpanser. Common Sheldrake.	Period. S. visit.
Spatulea clypeata. Shoveller. Rare upon the Tweed.	Occas. visit.
Anas Boschas. Wildduck.	Perman. resid.
Dafila caudacuta. Pintail. Rare. Tweed and Holy Island.	Occas. W. vis.
Querquedula crecca. Teal.	Perman. resid.
Mareca Penelope. Wigeon.	Period. W. vis.
Oidemia nigra. Black Scoter.	Period. W. vis.
fusca. Velvet Scoter.	Period. W. vis.
Somateria mollissima. Eider Duck.	Perman. resid.
Fuligula Tirina. Red-headed Pochard.	Occas. W. vis.
cristata. Crested Pochard.	Period. W. vis.
Harelda glacialis. Long-tailed Hareld.	Period. W. vis.
Clangula vulgaris. Common Golden-eye Garrot.	Period. W. vis.
Mergus merganser. Gooseander.	Occas. W. visit.
serrator. Red-breasted Merganser.	Period. W. vis.
albellus. Smew. Rare.	W. visit.

Colymbidæ.

Podiceps rubricollis. Red-necked Grebe. Rare.	W. visit.
cristatus. Crested Grebe. In the young state.	W. visit.
cornutus. Horned Grebe. In the young state.	W. visit.
auritus. Eared Grebe. In the young state.	W. visit.
minor. Little Grebe.	Perman. resid
Colymbus glacialis. Northern Diver.	Period. W. vis.
arcticus. Black-throated Diver. Rare. Caught in a salmon-net in the Tweed.	Occas. W. visit.
septentrionalis. Red-throated Diver.	Period. W. vis.

Alcadæ.

Uria Troile. Foolish Gullimot. Rocks of St Abbs.	Period. S. visit.
Grylle. Black Guillemot. In winter plumage.	Occas. W. visit.
Mergulus melanoleucos. Common Rotch. Rare.	Occas. W. visit.
Alca Torda. Razorbill. Rocks St Abbs.	Period. S. visit.
Fratercula arctica. Puffin.	Period. S. visit.

Pelecanidæ.

Phalacrocorax carbo.	Cormorant.		Perman. resid.
cristatus.	Crested Cormorant.		Perman. resid.
Sula bassana.	Solan Goose.		Period. S. visit.

Laridæ.

Sterna Boysii.	Sandwich Tern.	On coast.	S. visit.
Dougallii.	Roseate Tern.	On coast occasionally.	S. visit.
arctica.	Arctic Tern.	On coast occasionally.	S. visit.
minuta.	Little Tern.	Breeds near Holy Island.	S. visit.
Larus minutus.	Little Gull.	Very rare. A specimen killed at Holy Island, Oct. 1840.	Rare occas. vis.
ridibundus.	Black-headed Gull.		Perman. resid.
canus.	Common Gull.		W. visit.
glaucus.	Glaucous Gull.	Rare.	Occas. W. visit.
islandicus.	Iceland Gull.	Rare.	Occas. W. visit.
argentatus.	Herring Gull.	St. Abb's Head.	S. visit.
fuscus.	Lesser Black-backed Gull.		S. visit.
Lestris parasiticus.	Arctic Skua.	Autumnal visitant.	Occas. visit.
Thalassidroma pelagica.	Stormy Petrel.		Occas. visit.

Members Admitted 15*th September* 1841 :—

Mr Rowe, Surgeon, Coldstream.
Mr John Boyd of Cherrytrees.

A Descriptive Catalogue of the GASTEROPODOUS MOLLUSCA of Berwickshire. By George Johnston, M.D., F.R.C.S.E.

Part II.

Order—PECTINIBRANCHIATA.

Division—ASIPHONOBRANCHIATA.

Animal shelled, trachelipode, rarely gasteropode; the *shell* spiral, sometimes patelliform, with the margin of the aperture entire or continuous all round.—The genera are diœcious, in general phytophagous, and, with a few exceptions, inhabitants of the sea-shore.

7. Scalaria. Lamarck.

Shell turreted, the whorls crossed with elevated subacute ribs; aperture round, the margin continuous and reflected, the lower part on the side of the pillar formed into a sort of obsolete canal: operculum horny, spiral.—*Zoophagous.*

1. *S. Trevelyana*, shell yellowish-brown or white, with ten rounded whorls gradually tapered to a point, crossed by about fifteen thick plain ribs, interrupted by a separating line, the intermediate spaces smooth; aperture white, round. Height $\frac{8}{10}$ths; diameter of base $\frac{3}{10}$ths. *Leach* in Raine's Durham, p. 174.

Hab. Berwick Bay, rare: Holy Island.

I have seen only worn specimens, so that the natural colour remains to be determined. The shell is strong, and without any gloss in my specimens, and the ribs are obtuse and enlarged at the suture, where, instead of running in an uninterrupted line, they are a little bent, and fall into the intermediate spaces. The species is very like, and nearly allied to *Sc. Turtoni*, but differs from it in being smaller, and in having more numerous ribs.

8. Trochus. Linnæus.

Shell conical, the body-whorl angulated so as to make a flattened base, on which the shell rests when set on a plane surface; aperture transversely depressed, subquadrate, the margins disjoined, silvered interiorly; pillar arched: "operculum horny, circular, spiral, with numerous close-set volutions, and having the spiral line external."—*Sowerby.*

* *Base imperforate.*

1. *T. zizyphinus*, shell conical, yellowish-brown or flesh-colour, spirally ridged, the ridges flat and smooth; whorls eight, flat, separated by a smooth belt regularly spotted with pink; apex acute,

purple; base circularly striate, flattish; aperture subquadrangular, the pillar concave, pearly. Height $\frac{8}{10}$ths; the breadth $\frac{8}{10}$ths. *Dillw.* Rec. Sh. 799.

Hab. Berwick Bay, not common.

The shell is sometimes of a uniform white colour, when it has been described as a distinct species under the name of "Trochus Lyonsii;" and besides this there are in our Bay two varieties; in one the whorls are slightly concave, and the base is covered with the circular impressed striæ; in the other the whorls are even, and there are only two or three striæ at the pillar, and two near the margin, leaving the intermediate space perfectly smooth. Operculum thin, round, and circularly striate.

Snail of a more or less deep brown colour, which is often disposed in patches or irregular streaks, covered with small tubercles, and furnished on each side with four slender retractile filaments, originating from a free membranous border that garnishes the sides, the back concave and smooth: mouth shortly proboscidiform, furnished with two small corneous jaws: tongue long, linear, armed as usual with minute prickles arranged in regular series: tentacula setaceous, pale, quadrangular, with a dusky line along the upper angles, and rough with minute papillæ when viewed through a good magnifier: eyes on distinct pedicles at the external bases of the tentacula: margin of the collar crenate or sinuate: foot oblong, tapered posteriorly, the margin crenulate, the disk straw-yellow, more or less tinted with red or flesh-colour. The edges of the foot can be brought together so as entirely to conceal its disk.

** *Base umbilicate.*

2. *Tr. cinerarius*, shell conical, obtuse, yellowish or bluish-grey, with numerous narrow purplish stripes; whorls six, flat, spirally striate; the base flattish and the umbilicus deep; aperture white, perlaceous, subquadrangular. Diam. of base $\frac{6}{10}$ or $\frac{7}{10}$ths; height the same. *Dillw.* Rec. Sh. 779.

Hab. Between tide marks, very common.

The spire is more or less raised, the suture more or less distinct, the base in some more deeply striated than in others, and the umbilicus in young shells wider than in the old, in which it is almost obliterated; but among these varieties there are none with characters sufficiently marked to justify their elevation to the rank of species. Operculum circular, horny, thin, concentrically striate, with a membranous border.

The body and tentacula of the snail are finely marked with black transverse lines, which become reticulated on the sides: tentacula two, slender, setaceous: eyes on distinct footstalks at the external base of the tentacula: mouth striated with black lines, armed with a pair of oblong pointed cartilaginous jaws, and a ribbon-like tongue roughened with acute prickles set in transverse curved lines: sides of the body furnished with a ciliated membrane, underneath which protrude several long tentacular filaments, which issue from tubular sheaths, and are retractile: foot elliptical, yellowish, the margin fringed with very short fleshy filaments, visible only with a magnifier. Our children call the shell *Silver-buckies* or *Silver-Willies*: they do not eat the snail.

During the summer we often find a spawn on the fronds of sea-weed deposited in the form of a small ring, and of a cream colour. I believe this to be the spawn of Tr. cinerarius. The ring is gelatinous, firmly adherent, and contains innumerable ova, each separately laid in the centre of its own gelatinous vesicle.

3. *T. tumidus*, shell conical, obtuse, greyish-white mottled with darker spots or lines, spirally striated; whorls six, flattened on the upper margins, the superior minute; base convex; umbilicus small; aperture roundish. Diam. $\frac{3}{10}$ths; height $\frac{4}{10}$ths. *Flem.* Brit. Anim. 322. Tr. patholatus, *Dillw.* Rec. Sh. 776.

Hab. Berwick Bay, rare.

4. *T. Margarita*, shell depressed, subglobular, flesh-red and clouded, iridescent, smooth; spire lateral, of four whorls, the apex obtuse; base rounded; umbilicus small; aperture round, perlaceous. Diam. $\frac{1}{8}$th. *Gray*, in Zool. Journ. ii. 567. Helix Margarita, *Laskey*, in Wern. Mem. i. 408. tab. 8. fig. 5. Turbo Margarita, *Lowe*, in Zool. Journ. ii. 107. tab. 5. fig. 10, 11. *Flem.* B. Anim. 299.

Hab. On the fronds of sea-weed, not uncommon.

This pretty shell is glossy, and in some lights reflects metallic colours: it is smooth, or only marked with the striæ of growth, but the base has some faint impressed spiral striæ. Tentacula two, slender, white, setaceous, with the eyes on a pedicle at their external base: foot ovate with plain margins: sides furnished with tentacular filaments, four on each side: margin of the cloak between the tentacula rounded and beautifully crenulate. When the animal is in motion the shell is placed laterally.

The snail is active and quick in its progression, moving by very evident undulations of the foot. It adheres to smooth surfaces less tenaciously than most snails do, and is easily shook from its hold; nor does it seem to be so readily alarmed. When in confinement, it rarely leaves the water entirely; and it swims in a reversed position, but seldom, and with much less than its usual freedom. It lives naturally at low water-mark, and is usually found among the roots or on the frond of Laminaria digitata, or perhaps still oftener on the dulse (Rhodomenia palmata), which is probably a favourite food.

9. NATICA. ADANSON.

Shell globose, smooth, the body-whorl very large, and the spire small; aperture lunated, the pillar-lip oblique, toothless, with a callus more or less concealing the umbilicus; outer lip acute, plain; operculum horny.—*Zoophagous.*

1. *N. monilifera*, shell subglobular, smooth, greyish tinged with brown, and a row of brown waved stripes along the tops of the whorls; whorls six, the body very large, obscurely angled on the shoulder; spire somewhat produced, oblique; umbilicus deep, open, obscurely striate. Length $1\frac{4}{10}$ths; breadth 1 inch. *Lam.* Anim. s. Vert. vi. ii. 200. N. glaucina, *Flem.* Br. Anim. 319. Nerita glaucina, *Pen.* Brit. Zool. iv. 344. tab. 90. fig. 1.

Hab. Ross sands.

The waved oblong spots which run up the shell at the base of the sutures are concealed or obscured in recent specimens by the thin glaucous epidermoid covering. The umbilicus is not contracted by a deposition of callus, and is spirally striated; pillar white, thickened; outer lip thin, even, with a brownish margin; throat brown. Operculum horny, thin, ear-shaped, turned spirally at the inferior and inner margin, whence fine striæ diverge to the circumference.

The animal buries in sand at the very lowest recess of the tide, and is discovered by the little hillocks which it raises above the shell. Dr Gould, in his valuable and elaborate "Report on the Invertebrate Animals of Massachusetts," p. 232, asserts that the Naticæ are all very voracious, and play a conspicuous part in devouring the dead fish and other animals which are thrown up by the tide. The small circular holes with which bivalve shells are often drilled are also, according to Dr Gould, the work of these snails, and made by them to gain an entrance to the animal apparently so well secured against such a foe. Their foot is very large, so as completely to envelope the objects on which they prey.

2. *N. Alderi*, shell subglobular, smooth, flesh-coloured with a white zone at the sutures and base, the body with five rows of arrow-shaped brown spots, one continued round the base of the lesser whorls; spire small, slightly produced; umbilicus partly covered by callus and brown. Length $\frac{4}{10}$ths; breadth about $\frac{3}{10}$ths. *Forbes*, Faun. Mon. 31. Nerita glaucina, var. B. *Turt.* Conch. Dict. 125. *Hogg*, in Lin. Trans. xiv. 320. tab. 9. fig. 3–8.

Hab. Berwick Bay, occasionally found in the refuse of fishing-boats.

Operculum semilunate, horny, with a narrow membranous edge. The white band on the shoulder of the body-whorl, under the suture, is occasionally obscure or obsolete. A brown narrow fascia always enters within the umbilicus, and the callus, on the pillar above it, is more or less tinted with the same colour.

3. *N. helicoides*, shell ovato-conical, smooth, white, immaculate, coated with a yellowish epidermis; whorls five, rounded, separated by a channelled suture; the spire produced, rather obtuse; aperture pure white with a small fissure on the pillar. Length $\frac{6}{10}$ths; breadth scarcely $\frac{4}{10}$ths. *Lyell* in Phil. Mag. for May 1840, p. 365, fig. 12.

Hab. Berwick Bay, very rare.

This new species was found in the refuse of one of our fishing-boats. When the epidermis is removed, the whorls appear to be very finely striolate in a spiral direction.

This shell, which departs from the normal form of the genus, Mr Lyell finds, in a fossil state, in the "Norwich crag," when it appears to have been much more abundant than in our present sea. Mr Lyell has given an excellent figure of it, which will correct the faults of our own. In habit the species is closely allied to the *Natica canaliculata* of Gould. See his Report, p. 235, fig. 161.

I found, some time since, among the refuse of a fishing boat, a specimen of a Natica which appears to be identical with the Natica glaucinoides of my friend Dr Thomas Thomson (Rec. Gen. Science, i, p. 133.), and which Mr Alder tells me is certainly the Nat. clausa described by Mr Smith as a fossil found in the pliocene deposits of the British islands. I cannot, however, affirm that the species still lives in our Bay, for the shell was dead, and presented the same appearance as the subfossil specimens.

10. Turritella. Lamarck.

Shell turreted, tapered, with numerous whorls, the last not much larger than the penultimate; aperture round, the margin disjoined on the body-whorl, thin; operculum circular, horny.—*Zoophagous.*

1. *T. terebra*, shell white or pale brown, spirally ridged with fine decussated striæ in the interstices; whorls from twelve to sixteen, rounded, tapered to a point; aperture round, the outer lip very thin. Length $1\frac{1}{2}$ inch; breadth $\frac{4}{10}$ths. *Flem.* Br. Anim. 302. Turbo terebra, *Linn*—*Penn.* Brit. Zool. iv. 308. tab. 84. fig. 4.

Hab. Berwick Bay, in deep water.

11. LITTORINA. FERUSSAC.

Shell oval, rarely subglobular, thick, the body-whorl occupying at least one-half of the length, non-umbilicate; aperture roundish, the margin sharp-edged, disjoined on the body; pillar flattened; operculum horny, with few volutions increasing rapidly in width, its nucleus lateral.

1. *L. littorea*, shell ovate-acute, thick, spirally striated, greyish with numerous brown spiral lines; whorls six, nearly even, the superior small and ill defined; pillar white, the throat brown. Length $1\frac{4}{10}$ths; breadth $\frac{8}{10}$ths. Turbo littoreus, *Lin.*—*Dillw.* Rec. Sh. 817. *Flem.* Br. Anim. 298.

Hab. Berwick Bay, very common between tide marks.

In our bay L. littorea is subject to very little variety, but it occasionally occurs of a uniform hyacinth-red colour. The outer lip before maturity is thin, and marked with dark scores, but it ultimately grows thicker and white. The operculum is horny, ovate, pointed above, darker coloured and spirally twisted near the centre, the margin thin and membranous.

The animal is beautifully marked with black spots and lines disposed transversely, and forming a sort of network on the sides. Mouth shortly proboscidiform, furnished with a pair of triangular thick subcorneous jaws, and a narrow ribbon-like tongue rolled up spirally, and when extended upwards of an inch long: it is marked across with numerous denticulated striæ, and has a broad membrane at the base. Tentacula two, dorsal, tapered, somewhat compressed, contractile, spotted: eyes small, inserted into an indenture near their dilated bases: cloak with a plain continuous pale-yellow margin: branchiæ in a single long pectinate process adnate to the left side: rectum on the opposite side, large, with a prominent narrow orifice. Sexes separate; the penis of the male originating under the right tentaculum, large, tapering from a broad base to a point, a little compressed, retroflected. Foot white, oval, short, with plain margins. I have seen a specimen in which the tentacula were divided into two branches.

The snail, when washed and boiled, is eaten by children, and sometimes by the common people. Of late years great numbers have been exported from our coasts to the London market, where they find a ready sale:—

> "The *periwinkle*, prawn, the cockle and the shrimp,
> For wanton women's taste or for weak stomachs bought!"
> DRAYTON.

2. *L. rudis*, shell ovate, ventricose, obscurely striated in a spiral direction; whorls five, rounded, well defined by the suture; pillar

and margin of the lip whitish, the throat brown or purple. Length $\frac{7}{10}$ths; breadth $\frac{5}{10}$ths. Turbo rudis, *Flem.* Br. Anim. 298.

Var. a. Shell of a uniform pale dusky yellow, the spiral striæ impressed. Turbo rudis, *Mont.* Test. Brit. 304. *Maton* and *Racket*, in Lin. Trans. viii. 159. tab. 4. fig. 12, 13. *Lam.* Anim. s. Vert. vii. 49.

Var. b. Shell a uniform flesh-red, the spiral striæ often raised. Turbo rudissimus.

Var. c. Shell a uniform purplish red, the spiral striæ raised into sharp ridges. Turbo jugosus, *Mont.* Test. Brit. p. 586.

Var. d. Shell white or with two dusky bands, the spiral striæ elevated into ridges. T. jugosus, var. *Mont.* loc. cit.

Hab. On rocks at high-water mark or above it, abundant.

This never attains one half the size of the preceding, and is certainly a very distinct species, clustering in myriads in crevices of rocks at or above the highest tides, and very rarely descending to the zone of the common wrack (Fucus vesiculosus), which is the favourite walk of L. littorea. All the varieties are to be found intermixed, but many excellent naturalists consider those on which the striæ rise into ridges as distinct from the smoother kind, an opinion which I do not adopt, believing that this character may be dependent partly on age and partly on differences in the external influences to which they have been exposed. The animal is not streaked and spotted, but of a uniform colour with a dusky line along the outer side of the tentacula ; and it is, as Mr Boys first stated, viviparous, the females carrying their innumberable young, immersed in a cluster of jelly and arranged in transverse rows, within the branchial cavity, where they may be found at all seasons. The penis of the male is very large, retroflected, linear-oblong, compressed, serrulate on the outer side. Copulates in November ; and very small individuals may be found in sexual union at this period of the year.

3. *L. saxatilis*, shell subglobose with a small raised spire, regularly chequered with square spots on a white or yellow ground, spirally striate or grooved ; whorls four, rounded, the body very large ; aperture dark purple with a pale margin. Diam. 2 lines. *Bean.*

Hab. On rocks near low-water mark, which are bare of weed but covered with Balani.

Captain Brown, in his Illustrations of Conchology, has given, in plate 46, two figures, No. 7, 8, of a variety of Turbo littoreus, which seem to have been drawn from specimens of this species, but of a much larger size than any I have seen. If a variety, it certainly does not belong to the L. littorea but to L. rudis, with which it is found occasionally intermixed ; but Mr Bean and Mr Alder, both very experienced conchologists, consider it distinct. The latter remarks :—" It is not uncommon on rocks between high and low water mark, and in (what I take to be) its full grown state, has the margin of the aperture nearly continuous, with a slight depression behind it. There is a black variety of it which is very similar to T. tenebrosus ; but the latter species, so far as I know, is never found on rocks, but always in muddy estuaries."

4. *L. petræa*, shell conical, the body ventricose and larger than the

pointed spire, glossy-black, smooth; whorls five, almost even; aperture roundish, uniform dark glossy purple, the lip thin, the pillar rounded below, flat, and brought to an edge. Lengths $\frac{3}{10}$ths; breadth $\frac{2}{10}$ths. Turbo petræus, *Dillw.* Rec. Sh. 820. Helix petræa, *Mont.* Test. Brit. 403.

Hab. On rocks at high water mark, not common.

The colour of the shell is frequently obscured with extraneous matter, but its total want of spiral striæ suffices to distinguish it from all the preceding, were the other characters less discriminative than they really are, for this is a very distinct species. The base of the body-whorl is often white. Snail black with setaceous white tentacula, the eyes at their swollen bases: mouth proboscidiform, and, during its progress in water, the animal is continually protruding and retracting the tongue: foot short, broad, plain, very obtuse behind, pellucid white with a milk-white band across the front.

5. *L. neritoides*, shell subglobular, variously coloured, smooth or very faintly striated; whorls five, those of the spire small and depressed; throat of the aperture brown, the pillar pale. Length $\frac{7}{10}$ths; breadth $\frac{5}{10}$ths. *Forbes*, Faun. Mon. 19. Nerita littoralis, *Penn.* Brit. Zool. iv. 346, tab. 90. fig. 3. *Dillw.* Rec. Sh. 989. Turbo retusus et neritoides, *Lam.* Anim. s. Vert. vii. 48.

Hab. Berwick Bay, between tide marks, common.

The colour of the shell is commonly yellowish-brown, olive, or yellow, plain or banded, but many specimens are purplish-brown and prettily tesselated. These are reckoned by some to be a distinct species. The animal is essentially the same with L. littorea, but of a yellowish colour and unspotted, excepting a few minute specks on the sides and under the right tentaculum. Penis with a longish suddenly acuminated point, and the outer side of the broad part is roughened with granulations arranged in three rows.

On the 26th of November 1835, which was a fine day for the season and rather warm, and which had been preceded by two or three weeks of wet stormy weather, I visited our shore, and found that the animals were very active, creeping about with the head and tentacula more than usually protruded. From their unusual activity, and a certain indescribable bustle about them, my curiosity was roused to a more attentive examination, and I soon ascertained that they were busied in the great work of procreating their race. Several pairs were detected in connection, the male resting on the shell of the female: the yellow were coupled indiscriminately with yellow or with the olive coloured, and sometimes a small immature one with one full grown and aged.

This species is oviparous, and the spawn is deposited in spring on sea-weeds, particularly on Fucus vesiculosus and serratus, in roundish gelatinous masses about half an inch in diameter, and studded over with the imbedded ova. These lie without any certain order in the common mass, but each has its own separate cell, of a sub-hexangular figure; and in the centre of the individual eggs, the young are perceptible, like in every respect to their parent.

6. *L. Ulvæ*, shell conical, rather thick, yellowish-brown, smooth; whorls seven, nearly flat; aperture ovate, reflected on the pillar forming a slight fissure at the base. Lenth $\frac{2}{8}$ths. Turbo Ulvæ,

Penn. Brit. Zool. iv. 299. tab. 89. fig. 7. Cingula Ulvæ, *Flem.* Brit. Anim. 308. Paludina Ulvæ, *Forbes*, Faun. Mon. 18.

Hab. Muddy inlets. Shore below Beal, browsing on the Salicornia. Holy Island. Near Warren Mill.

The lip is often reflected on the pillar as in some Rissoæ. Snail blackish; mouth proboscidiform, slightly bilobed; tentacula tapered with a dark ring at the tips, the eyes near the thickened base and external; foot rather short, rounded behind, truncate in front; pale with a yellowish tint, the margins plane. Can float at the surface in a reversed position.

12. LACUNA. TURTON.

Shell conoid or somewhat globular, thin; aperture roundish or oval, with the lips disjoined; pillar flattened, with a longitudinal groove terminating at the upper end in an umbilicus: operculum horny, thin.

1. *L. pallidula*, shell subglobular, ventricose, thin, subpellucid, yellowish horn colour; whorls four, the spire depressed with minute but well-defined whorls; aperture wide, lunate, the pillar white, and the umbilicus large. Diam. $\frac{4}{10}$ths. *Turton* in Zool. Journ. iii. 190. Nerita pallidula, *Dillw.* Rec. Sh. 986.

Hab. Berwick Bay, on the leaves of Fuci near low-water mark, frequent.

Animal yellowish, unspotted: tentacula two, setaceous, the eyes at their outer base, small, prominent: mouth shortly proboscidiform: foot oval, obtuse posteriorly, plain: operculum horny, lunate, spiral at the base.

2. *L. vincta*, shell ovato-conical, subpellucid, smooth, with six rounded whorls, the lower faintly striated and marked with four brown bands, two of which are continued up the spire; aperture suborbicular, the pillar rounded, with a narrow groove and perforation. Length $\frac{5}{10}$ths, breadth $\frac{3}{10}$ths. *Turton* in Zool. Journ. iii. 192. Turbo vinctus, *Mont.* Test. Brit. 307, tab. 29. fig. 3.

Hab. On the leaves of Fuci about low-water mark, common.

The following varieties have occurred in our bay:—

(*a*) Shell thickish, the spire depressed, the body with only two narrow distant bands.

(*b*) Shell with the spire depressed, and three bands of a pine red colour on the body, the middle one broad. These two varieties belong to the L. quadrifasciata of *Turton*, or Turbo quadrifasciatus of *Montagu*, Test Brit. 328, tab. 20, fig. 7.

(*c*) Shell of a very pale rose colour without bands.

(*d*) Shell of a uniform yellowish-horn colour.

In all the body-whorl is obscurely angulated near the base, and at the suture, which is made more obvious by a whitish band winding up the spire. The snail is of a pale flesh colour, the proboscidiform mouth reddish-orange, the sides, and sometimes the head, dusky or black: tentacula setaceous, contractile, the eyes on short pedicles at their base: foot oval, rounded at both ends, widest behind, the anterior end capable of being extended considerably beyond the head, the margins plain, but there are two very short filaments between the hinder part and operculum. It swims on the surface in a reversed position, and it frequently leaves the water to settle on the surface of fuci exposed to the atmosphere.

3. *L. crassior*, shell conical, thickish, covered with a yellowish epidermis raised into numerous transverse plaits; whorls six, rounded, angulated at the suture and at the base of the body; aperture white, the pillar narrow, with a slight perforation. Length $\frac{5}{10}$ths; breadth nearly $\frac{3}{10}$ths. *Turton* in Zool. Journ. iii. 192. Turbo crassior, *Dillw.* Rec. Sh. 820. *Flem.* Brit. Anim. p. 299.

Hab. Berwick Bay, rare.

13. Rissoa. Freminville.

Shell conical or turreted, the body-whorl larger than the succeeding; aperture round or oval, the margin even, continued round the body-whorl; operculum horny.

1. *R. striata*, shell cylindraceous, obtusely pointed, light brown, with six-rounded whorls strongly striated in a spiral direction; aperture suborbicular, pointed above. Length $\frac{1}{8}$th. Turbo striatus, *Adams*, in Lin. Trans. iii. 66. tab. 13. fig. 25. 26. *Mont.* Test. Brit. 312. Cingula striata, *Flem.* Br. Anim. 307. R. communis, *Forbes*, Faun. Mon. 17.

Hab. On Fuci between tide marks, frequent.

Snail with white filiform tentacula, the eyes sessile at their base; foot linear-oblong, with plain margins. There are often one or two pale yellowish spiral bands on the body of the shell; and the whorls are frequently ribbed across, the ribs on the body disappearing before they reach the middle, and sometimes only to be traced in a nodulous line along the suture. Worn specimens from shell-sand are smooth and white, with the yellowish bands more distinctly visible.

2. *R. interrupta*, shell conical, pellucid, smooth, with five flattish whorls marked with oblong brown spots crossing the upper half, and a spiral band at the base of the body; aperture suborbicular. Length $\frac{1}{8}$th. Turbo interruptus, *Mont.* Test. Brit. 329. tab. 20. fig. 8. Cingula interrupta, *Flem.* Br. Anim. 308.

Hab. Very common between tide marks.

There is a variety of this shell without any spots, but with a white band in the middle of the body-whorl and winding up the spire, though less distinct there. The snail is an active creature, and can swim on the surface of the water in a reversed position like the aquatic pulmoniferous mollusca. The tentacula are long, filiform, white, the eyes at their base and sessile; head bilobate; foot white, linear-oblong, plain, free anteriorly, and capable of considerable elongation, the anterior portion divided from the posterior by a band distinguished by a difference in its colour, and on each side of it there is a sort of fin or fold of an oblong shape.

3. *R. semistriata*, shell conical, pellucid, white, with two rows of brown spots on the rounded whorls, which are spirally striate; whorls six; aperture suborbicular. Length $\frac{1}{10}$th. Turbo semi-

striatus, *Mont.* Test. Brit. Sup. 136. Cingula pulchra, *Johnston* in Edin. New Phil. Journ. June 1828, p. 80.

Hab. Berwick Bay, very rare.

This differs from the preceding in being broader in proportion to its length, in having two rows of oblong spots on the body and second whorls, in being marked spirally with faint impressed spiral striæ, and in the whorls being divided by a deeper suture. I have referred the species to the Turbo semistriatus of Montagu on the authority of my valued friend Mr Alder.

4. *R. parva*, shell conical, light-brown, with six rounded whorls ribbed across, the ribs smooth, obtuse, and rather numerous; aperture roundish, with thin and slightly reflected lips. Length two lines. Turbo parvus, *Mont.* Test. Brit. 310. Cingula parva, *Flem.* Brit. Anim. 306.

Hab. Berwick Bay, rare.

The ribs are strong, equidistant, and scarcely interrupted at the suture, but they terminate abruptly on the body-whorl in a faint spiral ridge. The lower half of the body is smooth, and marked with a brown band.

5. *R. alba*, shell conical, whitish, banded with brown, smooth, glossy, ribbed across the whorls, of which there are six, the apical ones plain; aperture roundish-oval with a slightly everted lip. Length $\frac{1}{10}$th. *Forbes*, Faun. Mon. 16. Cingula alba, *Flem.* Br. Anim. 309.

Hab. Berwick Bay, rare.

Mr Forbes remarks that this is probably a variety of R. parva.

6. *R. subulata*, shell subulate, very smooth, white, with two brown bands on the body winding up the spire at the suture; whorls nine or ten, flat, scarcely defined; aperture ovate, pointed above, white with a pellucid rim. Length $\frac{3}{10}$ths. Turbo subulatus, *Dillw.* Rec. Sh. 881. Phasianella subulata, *Flem.* Br. Anim. 301. Melania Donovani, *Forbes*, Faun. Mon. 15.

Hab. Berwick Bay, rare.

Besides the two bands about the middle of the body, the base is tinted with the same colour. The inner lip is reflected on the pillar, and continued round to the outer, as in other Rissoæ.

7. *R. reticulata*, shell conical, strong, opake, yellowish blotched with brown, cancellated with spiral and transverse striæ; whorls six, rounded, defined by a deep suture, the apical ones smooth; aperture round with a slight perforation behind the pillar, the lips plain, thickish. Length $\frac{1}{10}$th, breadth one half the length. Turbo reticulatus, *Mont.* Test. Br. 322. pl. 21. fig. 1. Cingula reticulata, *Flem.* Br. Anim. 306.

Hab. In shell sand, rare.

8. *R. costata,* shell conical, white with a brown tinge, thick, with six rounded whorls strongly striate in a spiral direction and ribbed across, the ribs strong, many, somewhat waved; aperture roundish, with a thick reflected crenulate rim, and a groove behind the pillar. Length $\frac{1}{8}$th. Turbo costatus, *Mont.* Test. Brit. 311. tab. 10. fig. 6. Cingula costata, *Flem.* Br. Anim. 305.

Hab. Berwick Bay, rare.

14. Odostomia. Fleming.

" Shell conical; aperture ovate; peristome incomplete retrally, and furnished with a tooth on the pillar."—*Fleming.*

1. *O. spiralis,* " whorls five, the lower part of the largest striated spirally; the remainder of the shell ribbed transversely." *Flem.* Brit. Anim. 310.

Hab. In shell sand from Eyemouth.

Shell conical, white, pellucid, the whorls five, flat, divided by a deep and rather broad suture, transversely ribbed; the body-whorl angulated towards the base and marked with spiral ridges, the upper half crossed with numerous plain flattish ribs. Length one line; breadth half its length.

15. Skenea. Fleming.

Shell discoid, smooth, the whorls rounded; aperture circular, the margin united all round; operculum circular, horny. Littoral.

1. *S. depressa,* shell depressed, corneous, flat above, widely umbilicate beneath; whorls four, wrinkled across; aperture circular, the margins free. Diam. one line. *Flem.* Brit. Anim. 313. Helix depressa, *Mont.* Test. Brit. 439. tab. 13. fig. 15.

Hab. On flat rocks between tide marks in Berwick Bay, in great profusion.

The shell is blackish when alive: operculum horny. Tentacula two, filiform, white, rather short, the eyes at their external base, sessile; mouth proboscidiform; foot short, tapered posteriorly, with plain margins. The animal swims with great facility in a reversed position; and in structure appears to be almost identical with Rissoa.

16. Valvata. Müller.

Shell spiral, horny, the spire discoidal or only slightly elevated, with rounded volutions; aperture circular, with a continuous sharp-edged rim; operculum horny, spiral, its volutions numerous and close-set. Fluviatile.

1. *V. piscinalis,* shell globular with an elevated obtuse spire, corneous; the whorls four, rounded, finely wrinkled across; aperture circular, the margins free; umbilicus deep. Diam. nearly $\frac{2}{8}$ths. *Flem.* Brit. Anim. 286. Turbo thermalis, *Dillw.* Rec. Sh. 852.

Hab. Slow streams and ponds. In the Tweed and Whiteadder near Berwick, plentiful.

This shell is plentiful in the marl dug out of peat bogs. When living it is of a pale-greenish horn colour, transparent and marked with a few dark lines which shew the course of the intestine. The animal is white and vivaceous, gliding along the bottom with its tentacula widely spread, the posterior one projecting from under the upper angle of the aperture, or swimming with ease in a reversed position on the surface. Mouth proboscidiform, darker: tentacula three, setaceous, lateral: eyes sessile, superior, at the base of the anterior tentacula; near the posterior tentaculum there is occasionally extruded an elegant plumose appendage supposed to be subservient to respiration: foot transparent white, oblong, wider and rounded behind, in front produced on each side into an acutely triangular process. Operculum horny, with circular striæ.

2. *V. cristata*, shell depressed, corneous, with four whorls flat above, the base widely and deeply umbilicate exposing the rounded whorls; aperture circular. Diam. 2 lines. *Flem.* Brit. Anim. 286. Turbo cristatus, *Dillw.* Rec. Sh. 883.

Hab. Ponds. In the Whiteadder near Berwick.

The animal is strictly aquatic, and never leaves the water even when confined to a small vessel. It can creep along the surface with the shell reversed. Behind the two anterior tentacula is a third, as in the preceding species, but the plumose appendage I have not seen, though the animal has been kept for several days together to allow repeated examinations. Eyes at the base of the anterior tentacula, rather prominent, with a light areola. Foot bilobed in front, the lobes becoming triangular when fully extended, posteriorly rounded.

The Paludina achatina I have occasionally found on the shores of our bay, having been brought in ballast from the Thames.

17. Tornatella. Lamarck.

Shell oval or oblong, with a short rather obtuse spire; aperture longitudinal, elongated, contracted above and widened below; outer lip simple, acute; pillar with one or more plaits.

1. *T. fasciata*, shell ovate, pale-purplish red, the body marked with two distant white bands and spirally striated; spire small, conical, of six whorls; aperture white, the pillar with an oblique fold. Length $\frac{4}{10}$ths; breadth $\frac{2}{10}$ths. *Lam.* Anim. s. Vert. vi. ii. 220. T. tornatilis, *Flem.* Br. Anim. 336. Voluta tornatilis, *Dillw.* Rec. Sh. 503.

Hab. Berwick Bay, very rare.

The striæ are much stronger and wider apart at the base of the shell.

18. Stylifer. Broderip.

Shell thin and transparent, spiral with a produced apex; aperture somewhat ovate, narrowed above, with an acute sinuated lip: no operculum.—*Zoophagous.*

1. *S. globosus*, shell globose, yellowish horn-colour, transparent, quite smooth ; whorls five ; the two lower ones very tumid, the three terminal ones abruptly minute, produced. Length 1 line. Phasianella stylifera, *Turton* in Zool. Journ. ii. 367. tab. 13. fig. 11.

Hab. Berwick Bay, attached to the spines of Echinus esculentus, very rare.

19. Velutina. Fleming.

Shell subglobose, covered with a distinct epidermis, the body-whorl very large and the spire small, lateral ; aperture large, no pillar, the margins acute, entire : no operculum.—*Zoophagous?*

1. *V. lævigata*, shell ampullaceous, horn-coloured, roughish, spirally striate, thin and subpellucid ; body-whorl very large, ventricose, the aperture roundish ; spire depressed, of three minute whorls. Length $\frac{5}{10}$ths ; diam. nearly $\frac{4}{10}$ths. V. vulgaris, *Fleming* in Edinburgh Encyclop. xiv. 625. V. lævigata, *Flem.* Brit. Anim. 326. *Gould's* Report, p. 241, fig. 159. Helix lævigata, *Dillw.* Rec. Sh. 971.

Hab. Deep water, not uncommon.

The shell is covered with a rough epidermis, and the striæ constitute properly fine ridges which are crossed by others less distinct ; but when the epidermis is removed by tossing on the shore, the surface becomes smooth or faintly striolate, and the shell itself is then either pure white, or pale rose-colour.

The animal is white and entirely fills the shell : tentacula two, tapered, short ; eyes on an enlarged space at the external base of the tentacula ; foot oblong, short, with plain margins : cloak plain, entire ; above the outer tentaculum the male organ appears in the shape of a short thick obtuse process.

20. Coriocella. Blainville.

Animal naked, gasteropodous ; cloak shield-like, sinuated in front, overlapping and concealing the body ; head quadrangular and depressed with the tentacula produced from the outer and anterior angles ; tentacula two, conical ; the eyes sessile at their external bases ; penis extrusile from the left side behind the tentaculum ; foot triangulate, truncate in front, the margins plain. *Shell* earshaped, white, patulous.

1. *C. tentaculata*, " tentacula produced, filiform ; the foot pointed behind." Lamellaria tentaculata, *Montagu* in Lin. Trans. xi, 186, pl. 12, figs. 5, 6. Sigaratus tentaculatus, *Flem.* Brit. Anim. 360.

Hab. In deep water among corallines, and under stones at low-water mark. It is not uncommon on the shores of Holy-Island, and in autumn of 1840 was found in abundance in the Coves-Haven.

The *slug*, when extended, is about three quarters of an inch long, of a circular or oval form, the back convex, roughish or granulous, of a wood-brown colour, speckled with a few irregular reddish and yellow dots, duskier in the centre, the margin of the cloak widely overlapping the foot, deeply sinuated in front, and with an obscure emargination behind. The head is truncate with two white awl-shaped tentacula, which are contractile and originate in the anterior angles, having the eyes, which are black and very distinct, at their external bases. The mouth is terminal, furnished within the fleshy lip with small cartilaginous jaws, and a long, narrow, linear, or riband-shaped tongue, roughened with spinules arranged in regular series. Above the head, and under the cloak, there is a large slit which leads to the branchial cavity, and the water of respiration is conducted to this wide orifice by a short canal formed by a fold of the cloak; and it is this fold which produces the frontal sinuation, for there is really no interruption in the margin of the cloak. Within the cavity there lies retroflected the male organ of generation, which seems very large in proportion to the animal: it is somewhat compressed, obtuse, with a long point directed backwards. Foot oblong, truncate in front, where it is opaque milk-white, the rest of it being watery white. The space between it and the cloak is more or less tinted with black or violet.

The *shell* is concealed and embedded in the cloak, occupying a dorsal and central position. It is three lines broad and about five long, ear-shaped, convex, milk-white, even and apparently smooth; but, when looked at through the magnifier, it is seen to be wrinkled by the lines of growth; spire depressed, small, consisting of a single whorl; aperture very patulous, oblong, the inferior margin somewhat truncate, the pillar lip flattened, and continued in a spiral form within the shell.

The creature creeps very slowly, and, when in progression, raises itself on the foot, while, at the same time, the tentacula are extended to the utmost, and protrude beyond the margin of the cloak: when at rest, they are kept concealed under this their penthouse. It swims easily in a reversed position at the surface, the foot being then made slightly concave. The form of the foot is variable; for sometimes the animal will expand it until it becomes almost circular, or extend it until it forms an oblong square obtusely pointed behind. When alarmed, the body is contracted so that the edges of the cloak meet together on the ventral aspect, and the foot is greatly narrowed. The eyes are proportionably large, and are visible from below, shining through the transparent skin.

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